

Release Notes

hp StorageWorks Multi-protocol Router XPath OS Version 7.1.2c

Third Edition (October 2004)

Part Number: AV-RW5LC-TE

This document contains last-minute and supplemental information about the XPath OS version 7.1.2c firmware for the Multi-protocol (MP) Router. In the event of conflicting information between these Release Notes and other documents in this product release, the Release Notes take precedence.

For the latest version of these Release Notes and other MP Router XPath OS documentation, access the HP storage web site at: <http://www.hp.com/country/us/eng/prodserv/storage.html>.



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Multi-protocol Router XPath OS Version 7.1.2c Release Notes
Third Edition (October 2004)
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About This Document

This section identifies the audience of these Release Notes and provides a high-level description of the information it contains.

Release Notes Information

These Release Notes cover the following major topics:

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Audience

These Release Notes are intended for systems administrators and technicians who are responsible for installing, operating, and maintaining HP StorageWorks Multi-protocol (MP) Routers using XPath OS version 7.1.2c firmware.

Overview

This document contains information about XPath OS version 7.1.2c firmware, which supports the HP StorageWorks MP Router. Refer to the HP Multi-protocol Router Product Web page for the latest information.

To access the Web page, go to the HP web site and follow the steps below:

<http://www.hp.com/country/us/eng/prodserv/storage.html>

1. Locate the **Networked storage** section of the Web page.
2. Under **Networked storage**, locate the **By type** subsection.
3. Click **SAN infrastructure**. The **SAN infrastructure** page displays.
4. Locate the **Multi-protocol Routers & Gateways** section.
5. Go to the **B-Series Multi-protocol Router** subsection.
6. Locate the **Product information** section.

Supported Routers

XPath OS version 7.1.2c supports the following HP Multi-protocol Routers and transceivers.

Table 1: Supported MP Router and Transceivers

Router and Transceivers	Part Number
StorageWorks MP Router base (8-port)	A7437A
StorageWorks MP Router full (16-port)	A7438A
Multi-protocol Router upgrade license	A7439A
Transceivers <ul style="list-style-type: none">■ Short Wave (300m@2Gb/s, 500m@1Gb/s)■ Long Wave (10Km)	A6515A or 300834-B21 A6516A or 300835-B21

Supported Versions of XPath OS

To locate supported versions of XPath OS, go to the HP web site and follow the steps below:

<http://www.hp.com/country/us/eng/prodserv/storage.html>

1. Locate the **Networked storage** section of the Web page.
2. Under **Networked storage**, locate the **By type** subsection.
3. Click **SAN infrastructure**. The **SAN infrastructure** page displays.
4. Locate the **Multi-protocol Routers & Gateways** section.
5. Go to the **B-Series Multi-protocol Router** subsection.
6. Locate the **Product information** section.
7. Click **Software & drivers**. The downloads page for the MP Router displays.
8. Select **Cross operating system (BIOS, Firmware, Diagnostics, etc.)**.
9. Select **Firmware for HP StorageWorks Multi-protocol Router**.

Technical Support

Contact Hewlett-Packard support for hardware, firmware, and software support, including product repairs and part ordering. To assist your support representative and to expedite your call, have the following information available:

- Technical support contact number, if available
- MP Router serial number
- XPath operating system version

Documentation

Additional documentation, including white papers and best practices documents, is available at the HP web site:

<http://welcome.hp.com/country/us/eng/prodserv/storage.html>.

Note: HP has made every effort to provide you with the most up-to-date Web retrieval procedures available at time of print. Note, however, that Web page links are subject to change.

To access the technical documentation:

1. Locate the **Networked storage** section of the Web page.
2. Under **Networked storage**, locate the **By type** subsection.
3. Click **SAN infrastructure**. The **SAN infrastructure** page displays.
4. Locate the **Multi-protocol Routers & Gateways** section.
5. Go to the **B-Series Multi-protocol Router** subsection.
6. Locate the **Product information** section.
7. Click **Technical documents**. A list of appropriate documents displays.
8. Select the applicable documents.

Fibre Channel Standards

For information about Fibre Channel standards, visit the following web site:
<http://www.t11.org>.

Standards Compliance

XPath OS v7.1.2c conforms to the following Fibre Channel Standards in a manner consistent with accepted engineering practices and procedures. In certain cases, additional proprietary supplemental functions may be added to those specified in the standards.

- FC-FLA NCIT S TR-20: 1998
- FC-FG ANSI X3.289: 1996
- FC-FS Rev 1.7
- FC-PH ANSI X3.230: 1994
- FC-PH-2 ANSI X3.297: 1997
- FC-PH-3 ANSI X3.303: 1998
- FC-SW-2 Rev 4.9
- FC-MI Rev 1.92
- FCP-2

Important Information

This section lists information you should be aware of when running XPath OS v7.1.2c. Refer to the following Web page for the latest information on supported B-Series Fibre Channel switch models and firmware versions:

<http://h18006.www1.hp.com/storage/saninfrastructure.html>

XPath OS and Fibre Channel Switch and Fabric OS Compatibility

Table 2 summarizes the B-Series Fibre Channel switch models and firmware versions that are supported with XPath OS v7.1.2c.

Table 2: XPath OS v7.1.2c Supported B-Series Switches and Firmware

	1 Gb	2 Gb 2/8, 2/8-EL, 2/16, 2/16-EL	2 Gb 2/32, 2/64	2 Gb 2/8V, 2/16V, 2/16N, 2/128	Fabric Manager*
HP Minimum Versions	v2.6.2a	v3.1.2a	v4.2.0c	v4.2.0c	v4.2.x
HP Recommended Versions	v2.6.2b	v3.1.3a	v4.2.2a	v4.2.2a	v4.2.x

*HP's *optional*/Fabric Manager software is strongly recommended in all configurations utilizing the MP Router.

Scalability Guidelines for the HP StorageWorks MP Router

Refer to the *HP StorageWorks SAN Design Reference Guide* for the MP Router scalability guidelines at the following location:

<http://h18000.www1.hp.com/products/storageworks/san/documentation.html>

Latest HP StorageWorks MP Router Support Information

For the latest information on MP Router support, refer to the following HP website:

<http://h18006.www1.hp.com/products/storageworks/mprouter/index.html>

Issues Fixed in this Release

[Table 3](#) lists enhancements included in this v7.1.2c firmware update.

Table 3: Updates to XPath OS 7.1.2c

Issue	Description
Intermittent FCIP path failures	In certain environments where the MP Router is configured for FCIP, under very specific conditions Fibre Channel links between the MP Router and connected switches that are part of the FCIP path may inaccurately be reported as failed by the MP Router.
DRM FCIP Support	The MP Router now supports FCIP with HSG80 Data Replication Manager.
Tru64 Cluster Support	The MP Router is now supported for use in all Tru64 cluster configurations. Note: SAN boot through the B-Series MP Router is not currently supported.
OVSAM Support	HP OpenView Storage Area Manager (OVSAM) now identifies the MP Router correctly, as the "HP StorageWorks Multiprotocol Router."

Known Issues and Important Notes

The tables in this section list known issues and information you should be aware of when using XPath OS v7.1.2c and the HP StorageWorks MP Router.

Table 4: Fibre Channel Routing Services

Issue	Description
Unexpected "LSAN Zone Update" messages or "unexpected physical device offline" messages	<p>These messages can occur during normal operation. However, if the MP Router reports numerous occurrences that cannot be correlated to actual initiated events, such as planned device reconfigurations or re-boots, examine low-level port error counts using the <code>portstatshow</code> command.</p> <p>Faulty cables and SFPs that cause interruptions in EX_Port connectivity might also cause unexpected fabric reconfigurations. In the event of unexpected fabric reconfigurations, ensure that there are no low-level errors occurring on ports, and focus diagnostic efforts on cables and SFPs.</p>
Zoning Restrictions for LSAN Zones and Local Fabric Zones	<p>Remote WWNs cannot be in both a Logical Storage Area Network (LSAN) zone and a local fabric zone of fabrics that they do not physically reside in. Putting them in both locations, may result in excessive boot times for host or servers in fabrics connected to the MP Router.</p> <p>If a remote node WWN is in an LSAN zone, then it cannot also be in a local non-LSAN zone in a fabric that it does not physically reside in. For example, if you have a host or storage device defined in a remote fabric zone and you wish to add either of these devices to an LSAN zone, you need to ensure that these devices are not listed in any local zones other than the physical fabric they reside in. Local WWNs are allowed in both an LSAN zone and the local zones of the fabric where they are physically located. (See Figure 1.)</p>

Table 4: Fibre Channel Routing Services (Continued)

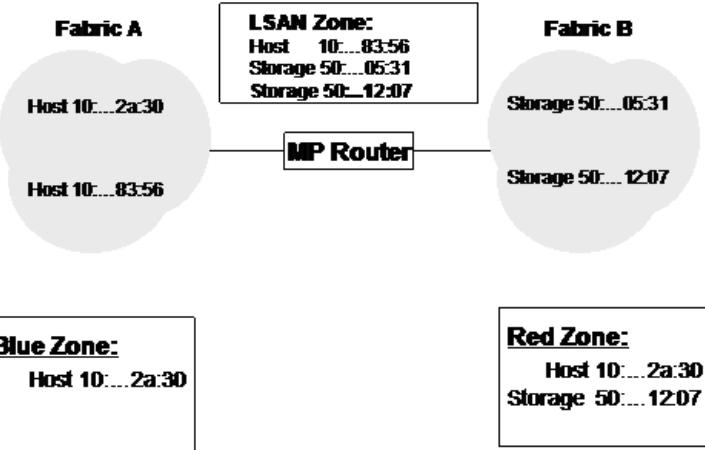
Issue	Description
	 <p>Fabric A</p> <p>Host 10.1.2a.30</p> <p>Host 10.1.83.56</p> <p>LSAN Zone: Host 10.1.83.56 Storage 50.1.05.31 Storage 50.1.12.07</p> <p>MP Router</p> <p>Fabric B</p> <p>Storage 50.1.05.31</p> <p>Storage 50.1.12.07</p> <p>Blue Zone: Host 10.1.2a.30</p> <p>Red Zone: Host 10.1.2a.30 Storage 50.1.12.07</p>

Figure 1: Valid MP Router LSAN/local zone configuration example

Table 4: Fibre Channel Routing Services (Continued)

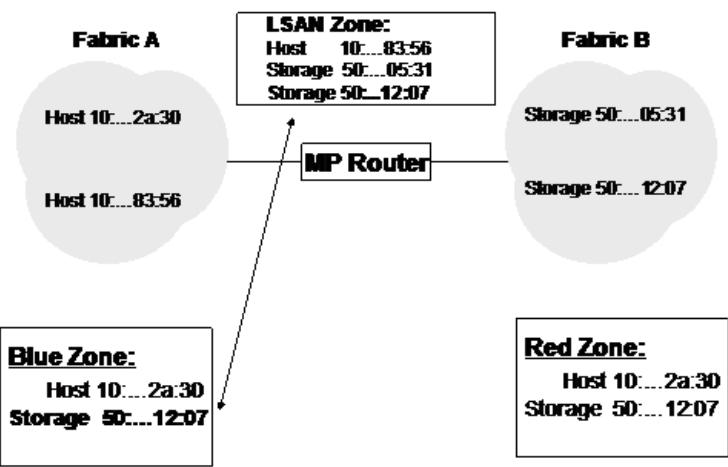
Issue	Description
	<p>Figure 2 shows an invalid zoning configuration because Storage 50:...12:07 is located in both the LSAN zone and Fabric A Blue Zone, and the device is not physically located in Fabric A.</p>  <p>Figure 2: Invalid MP Router LSAN/local zone configuration example</p>
HP-UX device file names/FCID persistence	<p>In a configuration with multiple MP Routers connected in parallel between two fabrics, if the MP Routers are powered off and on, the translated Fibre Channel Address IDs (FCIDs) may change (depending on the sequence of which Router comes up first) as seen by the hosts in an LSAN zone.</p> <p>Since the HP-UX device file names are dependent upon the FCIDs, the device file names also change whenever the FCIDs change. Hence, any applications dependent upon the device file names will need to be reconfigured and the hosts may be required to be rebooted to ensure access to the devices.</p> <p>Workaround: Do not power-off all the MP Routers at the same time. If the MP Routers are inadvertently powered off and the initial power-on sequence is known, power up the MP Routers based on the initial power-on sequence; the FCIDs will be correct.</p>

Table 4: Fibre Channel Routing Services (Continued)

Issue	Description
Fibre Channel ISL E-port speeds between MP Routers must be configured to 2 Gb	<p>Whenever two or more MP Routers are connected together through Fibre Channel, the port speeds must be configured to 2 Gb. If the ISL port speeds are left to auto negotiate, the ports may come up at 1 Gb whenever one of the Routers reboots or power cycles.</p> <p>Note: This restriction does not affect EX-Ports or GbE (FCIP) ports.</p> <p>Use the <code>portcfgspeed</code> command to configure the speed of a port on a Router:</p> <pre>switch:admin> portcfgspeed port [speed]</pre> <p>The speed parameter is defined as:</p> <ul style="list-style-type: none"> 0 - AN (Auto Negotiate) 1 - 1 Gb 2 - 2 Gb <p>Note: The port must be disabled before the speed parameter can be changed.</p> <p>Example</p> <p>To configure the speed of port 7 on a Router to 2 Gb:</p> <pre>switch:admin> portdisable 7 switch:admin> portcfgspeed 7 2 switch:admin> portenable 7 switch:admin> portcfgspeed 7 port 7 speed is set to: 2G</pre>
Fabric ID oversubscribed message	<p>The port error “Fabric ID oversubscribed” displays if you configure multiple EX-port connections to the same fabric using different Fabric IDs. While the Fabric ID used for each fabric connected to the MP Router is unique, all EX-ports connected to the same fabric from the MP Router must use the same Fabric ID.</p>

Table 4: Fibre Channel Routing Services (Continued)

Issue	Description
HBA configuration	<p>In certain large routed fabrics with large numbers of EX_Ports (for example, ≥ 8) connected to each fabric (usually done for bandwidth for large numbers of shared initiators and targets across fabrics) and a large number of shared devices (for example, ≥ 800), set the PLOGI timeout value for 1 Gb/s JNI FC HBAs to 3000 ms. This will allow time for the routed fabric to answer PLOGI requests.</p>
Meta-SAN traffic	<p>In a non-routed SAN, if there are multiple E_Port links between two switches and fabric reconfigurations occur due to the loss of a single E_Port link, then traffic around the fabric is generally not interrupted (or is interrupted for a very short time: for example, less than one second).</p> <p>Due to a design decision in this release of the Router, traffic disruption for routed traffic always occurs for a short period (less than one second), even if EX_Port links remain available. The manager of a non-routed SAN will not expect this performance characteristic.</p> <p>During testing, applications have been shown to tolerate the traffic disruption in the routed fabric and to recover based on an application specific recovery timeline, which is typically longer than when the fabric again permits traffic to flow. However, the commonly used I/O test tool, lometer, is known to panic or crash under certain circumstances of traffic disruption; this has been witnessed to occur in large routed fabric configurations.</p>
Edge fabric switch booting and EX_Ports	<p>Certain configuration values and versions of Fabric OS switches in edge fabrics might cause EX_Ports on the Router to be disabled when the switches are rebooted.</p> <p>Evidence of the unexpected disabled EX_Port can be seen in the Router's port display:</p> <pre data-bbox="491 1050 1100 1176"># switchshow : 7 id AN No_Light disabled EX_PORT (Last error: Failed to init in time)</pre> <p>You can work around this issue with switches running FOS v3.1 / v4.1.x, as follows:</p> <ul style="list-style-type: none"> ■ Issue the command <code>diagdisablepost</code> on edge switches connected to Router EX_Ports. ■ Upgrade edge switches to Fabric OS v3.1.2/v 4.2.x. ■ Manually enable any disabled EX_Ports when the condition occurs.

Table 4: Fibre Channel Routing Services (Continued)

Issue	Description
Edge fabric segmentation	If an edge fabric in which multiple EX_Ports are linked to multiple edge switches segments into two or more fabrics, all EX_Ports connected to any of the <i>new</i> fabrics resulting from the segmentation will be disabled due to a fabric ID (FID) conflict error. If the edge fabric remerges into a single fabric, the EX_Ports that were disabled remain disabled until administratively enabled. This characteristic is by design, to prevent erroneous meta-SAN configurations from forming.
Fibre Channel test equipment	<p>Fibre Channel test equipment must use a maximum frame size of 2048 bytes or less when used with the MP Router.</p> <p>Fibre Channel HBAs are not affected by this issue, because maximum frame size is typically negotiated during N_Port login (PLOGI).</p>
XPath/Fabric OS versions in large routed fabrics	Comprehensive testing across all supported Fabric OS versions has been performed with edge fabrics with up to 600 total edge devices (comprising both physical and routed WWNs). To reach the 1280 total edge device limit in the scalability table elsewhere in this document, customers are strongly recommended to upgrade to Fabric OS v4.2.0c/v3.1.2.
Router F_Ports and Fibre Channel Routing Service	Fibre Channel Routing Services in XPath OS v7.1.2c permits logical SANs consisting of initiators and targets in edge fabrics only. Initiators and targets on F_Ports of the platform acting as a router can communicate only with other devices in F_Ports in the backbone fabric of a routed SAN and not with devices in edge fabrics via EX_Ports. This functionality is planned for a future release of Fibre Channel Routing Services.
Secure Fabric OS compatibility	<p>B-Series Secure Fabric OS is not supported by XPath OS. An XPath OS v7.1.2c fabric will not merge with a Secure Fabric OS fabric. An EX_Port link to a Secure Fabric OS fabric switch will result in the EX_Port being internally disabled</p> <p>Evidence of the disabled EX_Port can be seen in the Router's port display:</p> <pre data-bbox="491 1102 1105 1228"># switchshow : 7 id AN No_Light disabled EX_PORT (Last error: Failed to init in time)</pre>
Edge fabric parameters	It is not possible to manage the following EX_Port edge fabric parameters from Advanced Web Tools: RA_TOV, ED_TOV. These parameters can be managed from the CLI.
Edge fabric PID format and Advanced Web Tools	<p>The Edge Fabric Summary screen of Advanced Web Tools presents a column of edge fabric PID formats, which are mostly blank due to a software limitation. It is possible to view this information in the CLI.</p> <p>The Edge Fabric Detail screen of Advanced Web Tools displays incorrect PID format information for the edge fabric, due to a software limitation. It is possible to view the correct information in the CLI.</p>

Table 4: Fibre Channel Routing Services (Continued)

Issue	Description
Firmware download failure with an FTP Server	<p>When using the <code>firmwareDownload</code> command to download MP Router firmware from an FTP server, a directory path may be required for the MP Router to find the correct image. The syntax for the <code>firmwareDownload</code> command is:</p> <pre data-bbox="501 400 1156 444">firmwaredownload hostIpAddr userName pfile password</pre> <p>An example of the <code>firmwareDownload</code> command failing while trying to access the XPath image from a RedHat Linux computer is as follows:</p> <pre data-bbox="501 527 1156 570">MP_Router:admin> firmwaredownload 10.1.2.3 hp-user xpath_os_v7.1.2c hp-pass</pre> <p>Please avoid rebooting or power-cycling the switch during firmwaredownload</p> <p>Starting to download the package.....</p> <p>error: FTP error. Please check FTP configuration. firmwaredownload failed</p> <p>The <code>hostIpAddr</code> is 10.1.2.3, <code>userName</code> is hp-user, <code>pfile</code> is <code>xpath_os_v7.1.2c</code>, and the <code>password</code> is hp-pass. This command fails because the <code>pfile</code> could not be found in the home directory of the user, hp-user.</p> <p>To correct this problem, put the absolute path to the XPath image file. The following example shows the absolute path and the <code>firmwareDownload</code> command succeeding.</p> <pre data-bbox="501 1031 1156 1074">MP_Router:admin> firmwaredownload 10.1.2.3 hp-user /home/hp-user>xpath_os_v7.1.2c hp-pass</pre> <p>Please avoid rebooting or power-cycling the switch during firmwaredownload</p> <p>Starting to download the package.....</p> <p>#</p> <p>Starting to install the package.....</p> <pre data-bbox="501 1270 1156 1315">##### #####</pre> <p>firmwaredownload completed successfully</p> <p>Please reboot the switch for changes to take effect</p>

Table 4: Fibre Channel Routing Services (Continued)

Issue	Description
Firmware download failure with an FTP Server (Continued)	Specifying the absolute path name to the XPath image file corrected the issue of <code>firmwareDownload</code> not finding the image file.

Table 5: FCIP Service

Issue	Description
FCIP with Continuous Access EVA (exchange-based trunking feature)	MP Router Fibre Channel over IP (FCIP) ports utilized for Continuous Access EVA must have the exchange-based trunking feature disabled. Disabling exchange trunking across FCIP port processors can be accomplished using the following command: <code>portCfgFcip -m 2</code> <code>FCIP portcfgfcip [-m LOAD_BAL {1-exchange, 2-SID_DID, 3-none}]</code> The default is set to 1. Reset to 2.
FCIP with Continuous Access EVA, Continuous Access XP and Data Replication Manager for HSG80	All Continuous Access EVA, Continuous Access XP and Data Replication Manager for HSG80 configurations using the MP Router require a minimum of 1 Gb/s IP bandwidth.
Multiple ISLs using FCIP not supported	Multiple FCIP links between any two HP StorageWorks Multi-protocol Routers, either as multiple E_Ports or in combination with exchange-based trunking, are not supported. Multiple ports on the Router can be used for the FCIP link only if each FCIP ISL is connected to a different Router on the remote end.
Router F_Ports and Fibre Channel Routing Service	Fibre Channel Routing Services in XPath OS v7.1.2c permits logical SANs consisting of initiators and targets in edge fabrics only. Initiators and targets on F_Ports of the platform acting as a router can communicate only with other devices in F_Ports in the backbone fabric of a routed SAN and not with devices in edge fabrics via EX_Ports. This functionality is planned for a future release of Fibre Channel Routing Services.
Wide area network services and FCIP	An FCIP port on the Router has no direct visibility of intermediate links to a destination FCIP port. With this version of XPath OS, care must be taken to provide a link service that matches the throughput requirements of the application using the FCIP link. If the I/O rate through the link exceeds the end-to-end throughput of the FCIP link, the actual throughput will drop below the level of the lowest-speed link. This issue will be addressed in an upcoming version of XPath OS.

Table 6: XPath OS Base Operating System and Fibre Channel Service

Issue	Description
FTP servers	<p>XPath OS supports downloading firmware from any FTP server that is RFC FTP compliant. Limited testing has been completed against the following FTP servers:</p> <ul style="list-style-type: none"> ■ HP-UX ■ RedHat 8.0 built-in FTP service (vsftpd) ■ Win2K Server FTP service from Microsoft (as part of Microsoft internet services) ■ NetBSD built-in FTP service ■ Solaris 8 built-in FTP service
GNU telnet client	<p>GNU telnet client sessions on certain workstations (for example, Sun Solaris) will be disconnected from XPath OS upon a user pressing Ctrl-C twice in succession. This is in contrast to B-Series Fabric OS, on which the same telnet client and the same key sequence does not cause a session disconnect.</p> <p>GNU telnet clients used with the UNIX® tee utility might be disconnected unexpectedly as well.</p> <p>Workaround: Use <code>/usr/bin/telnet</code> rather than <code>/usr/gnu/bin/telnet</code>.</p>
Root reboot command vs. admin user reboot command	<p>Users should never reboot the system from the root account using the <code>reboot</code> command, or data might be lost. To safely reboot the system, log in as root and change to admin by entering <code>admin</code> at the root prompt. When you are at the admin shell, execute the <code>reboot</code> command.</p>
FA zoning	<p>A private host attached to a Fabric OS switch might not be able to discover FA targets on a MP Router due to the length of the host's HBA PLOGI retry timeout. You can reduce the timeout value to resolve this issue.</p>
FA and QuickLoop zone management	<p>While zone merges with Fabric OS zones containing Fabric Assist mode and QuickLoop zones are supported when the MP Router is used for the FCIP services, users of the MP Router are not expected to manage such zones from the Router. It is not possible to manage such zones from Advanced Web Tools.</p> <p>FA and QL zones can be managed in the CLI of the MP Router, or in the CLI, Advanced Web Tools, or supported management applications of Fabric OS-based switches.</p>

Table 6: XPath OS Base Operating System and Fibre Channel Service (Continued)

Issue	Description
Fibre Channel Layer 2 fabric parameter management	<p>It is not possible to manage the following fabric parameters from Advanced Web Tools:</p> <ul style="list-style-type: none"> ■ RA_TOV ■ ED_TOV ■ RSCN_Mode <p>These parameters can be managed from the CLI.</p>
Bundled licenses	<p>The HP StorageWorks MP Router with XPath OS v7.1.2c includes licenses for the following features:</p> <ul style="list-style-type: none"> ■ Advanced Web Tools ■ Advanced Zoning ■ FCIP Tunneling ■ FC-FC Routing <p>Different models of the MP Router ship with either 8 or 16 ports enabled. If you require an upgrade from 8 to 16 ports, contact your sales representative.</p>
SFP media support	The MP Router supports only qualified SFP media. A list of the qualified SFPs is available by running the <code>sfpSupport</code> command.
Apcon IntellaPatch L1 switches	<p>With certain models (notably model 144) of Apcon IntellaPatch L1 switches in the data path, the following issue was observed that was <i>not</i> observed when those products were <i>not</i> in the data path:</p> <p>Fibre Channel router EX_Ports go online and offline during periods of I/O activity.</p>
Duplicate domain IDs	<p>When manually setting domain IDs, avoid duplicates. Under Fabric OS, when duplicate domain IDs are detected, fabrics are segmented. XPath OS handles duplicate domain IDs differently, resulting in repeated failed attempts to merge fabrics.</p> <p>This note does not apply to Fibre Channel Routing Services EX_Ports. Manually assigned but duplicate EX_Port domain IDs are correctly detected.</p>
Security Scan note	A NESSUS Scan of XPath OS v7.1 will report incorrectly that the SSH daemon has a buffer overflow vulnerability. The scan result is based on the major version identifier of the SSH daemon, but the XPath OS v7.1.2c SSH daemon includes the patch for the vulnerability.

Table 6: XPath OS Base Operating System and Fibre Channel Service (Continued)

Issue	Description
Fabric OS Web Tools v4.1.1 compatibility	Fabric OS Web Tools v4.1.1 does not recognize the MP Router. Manage the MP Router using Advanced Web Tools.
Fabric OS Web Tools vs. XPath OS Web Tools	The Fabric OS implementation of Web Tools is different from the XPath OS implementation of Web Tools. The Fabric OS Web Tools application runs entirely on the Fabric OS switch while presenting an HTML interface to the client browser. XPath OS Web Tools is implemented with Java™ objects running as plug-ins on the client browser. When a user is observing switch events on an XPath OS switch in a different time zone, the events will show up in the local client's time zone. Fabric OS keeps the event time base in the switch's time zone. This is a design implementation change that will be updated in upcoming releases of XPath OS.

Table 7: iSCSI Gateway Service

Issue	Description
iSCSI Gateway Service support	The iSCSI Gateway Service of the MP Router is not supported for use in this release.

Table 8: Limitations

Issue	Description
API support	<p>Users of this release are strongly encouraged to:</p> <ul style="list-style-type: none"> ■ Manage the MP Router's functions using the MP Router's CLI and Advanced Web Tools. ■ Create LSANs in edge fabrics using any tools that can manage zoning. <p>XPath OS v7.1.2c generally supports Fabric Access API-based applications such as Fabric Manager and OVSAM. However, note the following:</p> <ul style="list-style-type: none"> ■ Testing of API-based applications has not been completed. Check with the management application vendor for AP support status. ■ Existing versions of Fabric Manager and other API-based applications that manage zoning in edge fabrics can be used to configure LSAN zones that create logical storage area networks by using the Router. ■ API-based applications must be compiled with new API libraries to control directly supported MP Router functions. Those libraries will not be available until a later date. ■ A FAL-based application connected to a Fabric OS v2.6 switch will not properly interpret the presence of virtual switches and domains created in routed fabrics.

Table 8: Limitations (Continued)

Issue	Description
Multiple ISLs using FCIP is not supported	<p>Multiple FCIP links between any two MP Routers, either as multiple E_Ports or in combination with exchange-based trunking, is not supported.</p> <p>Multiple ports on the Router can be used for the FCIP link only if each FCIP ISL is connected to a different Router on the remote end.</p>
Inconsistent zone database	<p>XPath OS does not currently support Reliable Commit Service. In large fabrics, when disruptive activities in the fabric occur, the zone database in the XPath OS v7.1.2c switch might be inconsistent. These inconsistencies might prevent the fabrics from merging.</p> <p>Note: When MP Router with XPath OS v7.1.2c is used as an L2 switch in a fabric with Fabric OS switches running RCS, the fabric will negotiate down to a level at which all switches will not run RCS.</p> <p>To work around this issue, manually ensure that zone databases are consistent</p>
Fibre Channel Class 2	<p>XPath OS supports only Fibre Channel Class 3. Testing has shown that Class 2 devices attached to and supported by Fabric OS-based platforms communicate properly through FC-FC routing services on XPath OS v7.1.2c and are supported.</p> <p>N[L]_Port devices that are connected directly to the MP Router and cannot automatically or manually accept the F_Port's request for Fibre Channel Class 3 are affected. The IBM AIX operating system configured with the IBM 6228 HBA is known not to be able to accept Class 3 and therefore cannot register with the XPath OS Fibre Channel Name Server.</p>
Secure Fabric OS compatibility	Secure Fabric OS is not supported by XPath OS. An XPath OS v7.1.2c fabric will not merge with a Secure Fabric OS fabric.
Fibre Channel Management Server in-band support	XPath OS v7.1.2c does not support Management Server requests from hosts connected to the switch. Login requests to the Management Server will be rejected.
Name Server and Zone Server database sizes	<p>The Name Server and Zone Server databases support fabrics within (and actually far larger than) the scalability guidelines. Fabric and zone merge attempts with fabrics beyond the scalability limits presented in this document will prevent fabrics from merging.</p> <p>Fibre Channel Routing Services does not participate directly with Name Server and Zone Server databases on edge fabrics; rather, it consumes zones that begin with the string LSAN_ only and creates Name Server entries in edge fabrics for shared devices only.</p>

Table 8: Limitations (Continued)

Issue	Description
Fibre Channel Management Server platform services compatibility	XPath OS v7.1.2c is not compatible with the Fabric OS implementation of the Fibre Channel Management Server platform services. If platform services are enabled on a Fabric OS fabric and a merge is attempted with an XPath OS v7.1.2c fabric, the E_Port links between the fabrics will link and segment at intervals; in effect, the fabrics will not merge. The command <code>msP1MgmtDeactivate</code> should be executed on all Fabric OS switches prior to any merge attempts with XPath OS.
Fabric OS open E_Port is not supported	Fabric OS open E_Port is not supported on XPath OS.

Documentation Updates

This section provides information on last-minute additions or corrections to the documentation.

HP StorageWorks XPath OS Version 7.1.x MIB Reference Guide

On page 14, replace the following paragraph and bulleted list:

Since different vendors vary the information in their private enterprise MIBs, it is necessary to verify their information. The Fibre Channel MIB standards dictate that certain information be included in all MIBs; it is the vendor's responsibility to follow the standards. The standards are:

- *FibreAlliance* (FA) MIB.
- *Fabric Element* (FE) MIB.

with the following paragraph:

The standard is FibreAlliance (FA) MIB. See “Loading HP MIBs” on page 15 for more information.

On page 15, in the paragraph under the heading “Loading HP MIBs,” delete the following sentences:

The HP agents support many other Internet-standard MIBs. These standard MIBs are defined in RFC publications.

On page 15, in the same paragraph, replace the following sentence:

To find specific MIB information, examine the HP propriety MIB structure and the standard RFC MIBs supported by HP.

with:

To find specific MIB information, examine the HP proprietary FA MIB structure and the standard RFC MIBs supported by HP.

On page 15 in Figure 6, replace the word “MIB” in the bubble labeled:

MIB
Module name
(XOS supported)

with:

FA 3.0 MIB

On page 20, under sysServices, change the return value mentioned in the Notes section from “79” to “72.”

On page 26, under systemUrl, replace the Notes section content with:

The default value is MY_SYS_URL and is retained across boot.

On page 32, under connUnitContact, remove the Notes section.

On page 33, under connUnitEventFilter, in the Notes section, replace “debug” with “warning.”

On page 33, under connUnitPortUnitId, replace the Notes section content with the following:

Displays the switch WWN.

On page 34, under connUnitPortIndex, in the Description section, replace the phrase:

between 0 and the *maximum number of system-supported ports*

with:

between 1 and the *maximum number of system-supported ports*

On page 35, under connUnitPortFCClassOp, replace the Notes section content with the following:

For an F_ or FL_Port, this value is 0x0008. For a G_ or E_Port, this value is 0x0009.

On page 36, under connUnitPortStatus, add the following sentence at the end of the Description section:

If the value of connUnitPortStatus is not online, it is reported as unknown.

On page 38, under connUnitPortSpeed, replace the Notes section content with the following:

The valid values for an HP StorageWorks Core Switch 2/64 are 2,097,152 or 1,048,576 KBps.

On page 38, under connUnitPortPhysicalNumber, replace references to “Core Switch 2/64” with MP Router.

On page 39, under connUnitPortProtocolCap, in the Description section, change the return value from “07F” to “0x15.”

On page 43, under connUnitLinkAgentAddressY, connUnitLinkAgentAddressTypeY, and connUnitLinkAgentPortY, remove the Notes sections.

On page 45, after connUnitPortStatCountBBCreditZero and before connUnitPortStatCountPBSYFrames, add the following:

connUnitPortStatCountInputBuffersFull

OID 1.3.6.1.3.94.4.5.1.9

Description The number of occurrences when all buffers of a port were full and outbound buffer-to-buffer credit transitioned to 0. There is no credit to provide to the other side.

Notes This is a Fibre Channel-only statistic only.

On page 45, after connUnitPortStatCountFBSYFrames, and before connUnitPortStatCountFRJTFrames, add the following:

connUnitPortStatCountPBSYFrames

OID 1.3.6.1.3.94.4.5.1.11

Description The number of times that PBSY was returned to this port as a result of a frame that could not be delivered to the other end of the link. This occurs if the destination port is temporarily busy. PBSY can occur only on SOFc1 frames (the frames that establish a connection).

Notes This is a Fibre Channel-only statistic. This is the sum of all classes. If you cannot keep the by-class counters, then keep the sum counters.

On page 48, under Connectivity Unit Service Tables Group, add the following Notes section:

Notes HP supports FA_V4_0.mib and not FA_V3_0.mib, for connUnitSnsTable only.

On page 49, under connUnitSnsPortIPAddress, change “IPv4-formatted” to “IPv6-formatted.”

HP StorageWorks XPath OS Version 7.1.x Advanced Web Tools User Guide

On page 20, in the “Main window” bullet, replace the sentence:

If you quit the Switch Explorer instance, the Switch Manager instance continues to execute (and vice versa).

with the sentence:

If you quit the Switch Explorer instance, the Switch Manager continues to execute (and vice versa).

On page 26, in the “Viewing Fabric Information” section, in the second bullet under “Switch Name,” replace the following sentence:

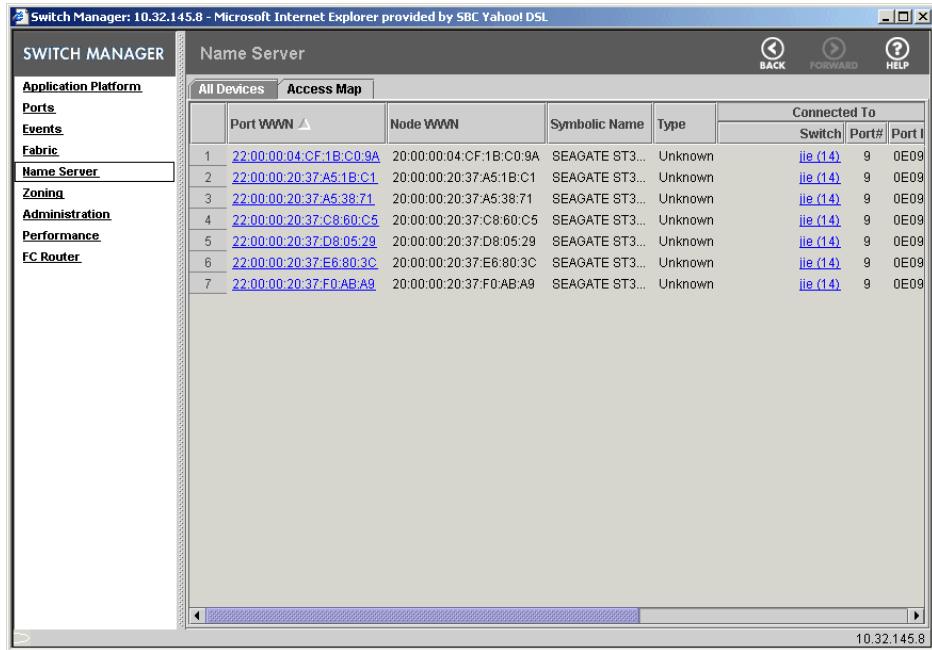
For an MP Router, this results in a new Switch Manager instance being launched from that MP Router.

with:

For an MP Router, this results in a new Switch Explorer instance being launched from that MP Router.

On page 26, under the explanation of the Topology table, in the paragraph explaining “Remote Domain,” replace “Switch Manager” with “Switch Explorer.”

On page 35, replace Figure 9, “Name Server Page with All Devices Tab Selected,” with the following figure:



The screenshot shows a Microsoft Internet Explorer window titled "Switch Manager: 10.32.145.8 - Microsoft Internet Explorer provided by SBC Yahoo DSL". The left sidebar contains a navigation menu with "SWITCH MANAGER" at the top, followed by "Application Platform", "Ports", "Events", "Fabric", "Name Server" (which is bolded and underlined, indicating it is the active tab), "Zoning", "Administration", "Performance", and "FC Router". The main content area is titled "Name Server" and has two tabs: "All Devices" (which is selected and highlighted in blue) and "Access Map". Below the tabs is a table with the following data:

Port	Port WWN	Node WWN	Symbolic Name	Type	Connected To		
					Switch	Port#	Port
1	22:00:00:04:CF:1B:C0:9A	20:00:00:04:CF:1B:C0:9A	SEAGATE ST3...	Unknown	ie (14)	9	0E09
2	22:00:00:20:37:A5:1B:C1	20:00:00:20:37:A5:1B:C1	SEAGATE ST3...	Unknown	ie (14)	9	0E09
3	22:00:00:20:37:A5:38:71	20:00:00:20:37:A5:38:71	SEAGATE ST3...	Unknown	ie (14)	9	0E09
4	22:00:00:20:37:C8:60:C5	20:00:00:20:37:C8:60:C5	SEAGATE ST3...	Unknown	ie (14)	9	0E09
5	22:00:00:20:37:D8:05:29	20:00:00:20:37:D8:05:29	SEAGATE ST3...	Unknown	ie (14)	9	0E09
6	22:00:00:20:37:E6:80:3C	20:00:00:20:37:E6:80:3C	SEAGATE ST3...	Unknown	ie (14)	9	0E09
7	22:00:00:20:37:F0:AB:A9	20:00:00:20:37:F0:AB:A9	SEAGATE ST3...	Unknown	ie (14)	9	0E09

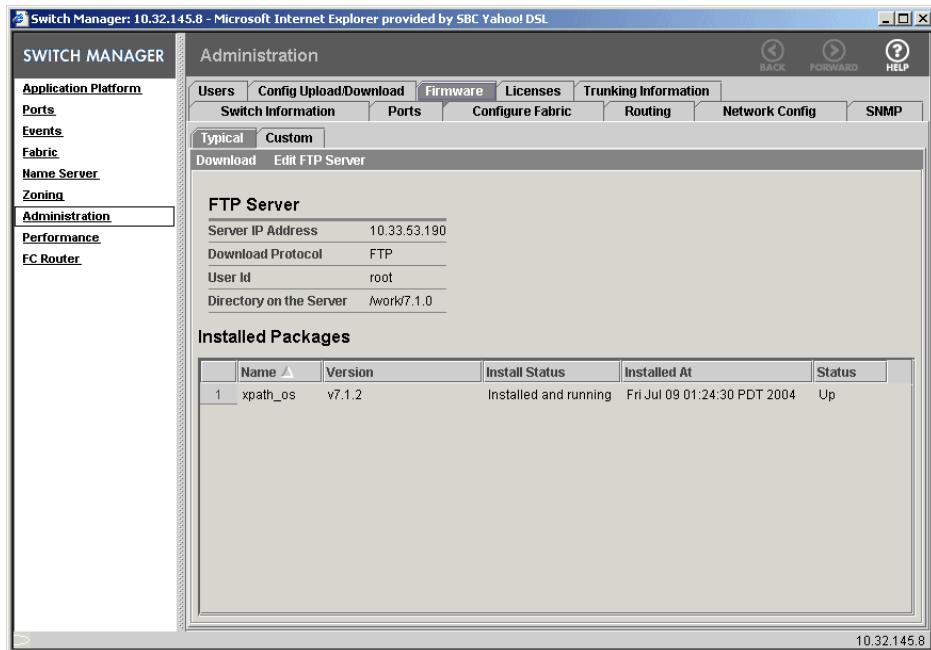
On page 38, in the section “Viewing Switch Information,” remove the following note:

Note: Depending on the switch model, some of the buttons might not be activated, or might display different information.

On page 41, in the section “Configuring Ethernet Management Ports,” replace the first sentence with the following:

The MP Router provides two 10/100 Mb/s Ethernet management ports, capable of being configured as a single IP address or as two unique IP addresses.

On page 50, replace Figure 15, “Administration Page with Firmware Tab Selected” with the following figure.



On page 64, in the “Stopping a Port” section, replace the following sentence (the last sentence, after step 7):

When the port is stopped, Port Status is Down and Port Admin Status (in the port drill-down page) is Stopped. The port icon color is gray.

with:

When the port is stopped, Port Status is Down. The port icon color is gray.

On page 64, in the “Enabling a Port” section, replace step 7 with the following:

7. Click **Close** to close the Enable Port window. The enable operation continues even if you close the window before the port is started. When the port is enabled, Link Status is Enabled.

On page 65, in the “Disabling a Port” section, replace step 8 with the following:

8. Click **Close** to close the Disable Port window. The disable operation continues even if you close the window before the port is disabled.

When the port is disabled, Link Status is **Disabled** and the port icon color is yellow (unless the port is stopped, in which case it is gray).

On page 68, in the “Zoning Terminology” section, replace the definition of “Zone member” with the following:

An alias, port, domain ID and port pair, port WWN, or nodeWWN that is part of a zone.

On page 88, in the “Event Log” section, replace the second paragraph with the following:

The event log is a circular buffer. When the internal buffers are full, new messages overwrite old messages. For information on buffer limits, refer to the *HP StorageWorks XPath OS Version 7.1.x System Error Messages Reference Guide*.

On page 110, in the section “LSANs and Zoning,” replace the second bullet at the bottom of the page with the following:

- Members must be identified by their port WWNs, because PIDs are not necessarily unique across fabrics.

On page 113, in the section “Viewing Edge Fabric Information,” replace the terms and descriptions with the following:

Edge WWN	The WWN of the switch of the edge fabric.
ID	The fabric ID of the edge fabric.

On page 126, replace the text in the section “Browser Limitations” with the following:

Following is the known limitation in Web Tools, relating to the browser:

- Launching a Telnet session from Web Tools on a Solaris or Linux® system when using a Mozilla browser is not supported, due to technical limitations in Mozilla. Use an external Telnet application to connect to the switch.

On page 126, add the following text to the end of the page:

Online Help Issue

The following is a known limitation in the Advanced Web Tools online help:

- In online help, sometimes the text in a table might be unreadable and appear to be overwritten by other text. In such a case, click on the affected text to refresh the text display.

On page 135, in Table 4, “Telnet Commands and Web Tools Equivalents,” remove the following commands and their descriptions:

ifcsDisable	No corresponding Web Tools equivalent.
ifcsEnable	No corresponding Web Tools equivalent.
ifcsShow	No corresponding Web Tools equivalent.

HP StorageWorks Multi-protocol Router Version 7.1.x Installation Guide

Connecting AC Power section

On page 46, replace step #4:

4. Verify that the power LED on the port side of the MP Router is green as shown in [Figure 11](#).

with the following:

4. Verify that both the power LED and the system LED on the port side of the MP Router are green as shown in [Figure 11](#).

Logging in to the MP Router section

On page 50, replace step #1:

1. Verify that the MP Router is powered on and that POST is complete by verifying that all power LED indicators are displaying a steady green light as shown in [Figure 11](#) and [Figure 12](#).

with the following:

1. Verify that the MP Router is powered on and that POST is complete by verifying that the power LED, the system LED, and the DC OK and AC OK LEDs are all displaying a steady green light as shown in [Figure 11](#) and [Figure 12](#).

Installing Transceivers section

On page 54, replace the Caution text:



Caution: The minimum bend radius for a 50-micron cable is two inches under full tensile load. Tie wraps are not recommended for optical cables because they are easily overtightened.

with the following:



Caution: A 50-micron cable should not be bent to a radius less than two inches under full tensile load and 1.2 inches with no tensile load. Tie wraps are not recommended for optical cables because they are easily overtightened.

Setting the Date and Time section

On page 59, replace the second paragraph and subsequent Note:

Additionally, you can synchronize the local time of the Principal or Primary Fabric Configuration Server (FCS) switch to an external NTP server using the `tsclockserver` command.

Note: The `date` and `tsclockserver` commands are disabled when the security feature is enabled. With security enabled you can only view the current date setting unless the commands are performed on the Primary FCS switch.

with the following paragraph (omit the Note):

Additionally, you can synchronize the local time of the principal switch to an external NTP server using the `tsclockserver` command.

Synchronizing the Local FCS Switch to an External NTP Server section

On page 60, replace the last paragraph:

To synchronize the local time of the Primary FCS switch to an external NTP server, follow these steps.

with the following:

To synchronize the local time of the principal switch to an external NTP server, follow these steps.

Upgrading a 8-port Base Model to a 16-port Full Model section

On page 26, insert a Note after step 4, as follows:

4. Use the `portstart` command to start the ports. (This command loads the port code, unlike the `portenable` command, which enables the port laser.) For example:

```
portstart 8-15
```

Note: After installing the HP StorageWorks MP Router Upgrade License, you must use the `portstart 8-15` command to enable all sixteen switch ports. Refer to the *HP StorageWorks XPath OS 7.1.x Procedures User Guide* for more information.

Items Required section

On page 98, in the “Items Required” list, remove “(if necessary)” from the first bulleted item, New SFP.

Procedure section

On page 99, replace the *Caution* text:



Caution: The minimum bend radius for a 50-micron cable is two inches under full tensile load and 1.2 inches with no tensile load. Tie wraps are not recommended for optical cables because they are easily overtightened.

with the following:



Caution: A 50-micron cable should not be bent to a radius less than two inches under full tensile load and 1.2 inches with no tensile load. Tie wraps are not recommended for optical cables because they are easily overtightened.

On page 100, replace step 6 text:

6. Verify that the SFP is functioning correctly.

Enter `sfpshow` or `sfpsupport` at the command line prompt to view SFP status. For more information about these commands, refer to the *HP StorageWorks XPath OS 7.1.x Command Reference Guide*.

with the following:

6. Verify that the SFP is functioning correctly.

Enter `sfpshow` at the command line prompt to view SFP status. Enter `sfpsupport` at the command line prompt for a list of supported SFPs. For more information about these commands, refer to the *HP StorageWorks XPath OS 7.1.x Command Reference Guide*.

Environmental Specifications section

On page 105, the temperature value for both operating and non-operating environments does not include Fahrenheit ranges.

Insert the Fahrenheit equivalents:

Operating range (10°C to 40°C), (50°F to 104°F)

Nonoperating range (-25°C to 70°C), (-13°F to 158°F)

Glossary entries

On page 128, remove the “port address” entry. It is not applicable to the MP Router XPath OS firmware.

On page 129, remove “QuickLoop” entry. It is not applicable to the MP Router XPath OS firmware.

